Observations

A Monthly Publication Of The CHESTER COUNTY ASTRONOMICAL SOCIETY

Vol. 21, No. 6 *Two-Time Winner of the Astronomical League's Mabel Sterns Award ☼ 2006 & 2009* *June 2013*

In This Issue

Night Vision

CCAS Vice President Liz Smith submitted this photo taken at a recent star party. It reminds me of the movie poster for the 1980's movie "The Thing".

Membership Renewals Due

06/2013	Hebding Kovacs Siskind
07/2013	Hockenberry / Miller
08/2013	Harp Knabb Lurcott, Linda Zimmer
09/2013	Catalano & Family Lurcott, Ed

Important June 2013 Dates

8th • New Moon, 3:56 p.m.

16th • First Quarter Moon, 5:24 p.m.

21st • Summer Solstice, 1:04 a.m.

23rd• Full Moon, 11:32 a.m.

30th • Last Quarter Moon, 4:53 a.m.

CCAS Upcoming Nights Out

CCAS has several "nights out" scheduled over the next few months. Members are encouraged to help out during these events any way they can. See below for more information.

☼ **Friday, June 14, 2013.** CCAS Monthly Observing Session, Myrick Conservancy Center, BVA. The observing session starts at sunset.

☼ **Friday, July 12, 2013.** CCAS Monthly Observing Session, Myrick Conservancy Center, BVA. The observing session starts at sunset.

Spring/Summer 2013 Society Events

June 2013

5th • PA Outdoor Lighting Council monthly meeting, 1438 Shaner Drive, Pottstown, PA 19465, starting at 7:30 p.m. For more information and directions, visit the PA Outdoor Lighting Council website.

14th • CCAS Monthly Observing Session, Myrick Conservancy Center, BVA (inclement weather date June 16th). The observing session starts at sunset.

20th • The von Kármán Lecture Series: Forecasting Quakes: Facts, Myths and Possibilities, Jet Propulsion Laboratory, Pasadena, California. Live stream of free lecture presented by NASA & Caltech.

20th • Open call for articles and photographs for the July 2013 edition of Observations.

21st • Summer Solstice (1:04 AM EDT) - The North Pole of the earth will be tilted toward the Sun, which will have reached its northernmost position in the sky and will be directly over the Tropic of Cancer at 23.44 degrees north latitude. This is the first day of summer (summer solstice) in the northern hemisphere and the first day of winter (winter solstice) in the southern hemisphere.

26th • Deadline for newsletter submissions for the July 2013 edition of Observations.

July 2013

10h • PA Outdoor Lighting Council monthly meeting, 1438 Shaner Drive, Pottstown, PA 19465, starting at 7:30 p.m. For more information and directions, visit the PA Outdoor Lighting Council website.

12th • CCAS Monthly Observing Session, Myrick Conservancy Center, BVA (inclement weather date July 13th). The observing session starts at sunset.

20th • The von Kármán Lecture Series: Exploring the Extreme Universe with NuSTAR, Jet Propulsion Laboratory, Pasadena, California. Live stream of free lecture presented by NASA & Caltech.

20th • Open call for articles and photographs for the August 2013 edition of Observations.

26th • Deadline for newsletter submissions for the August 2013 edition of Observations.

27th • CCAS Annual Summer Picnic. See the July 2013 edition of Observations for details and directions.

Minutes from the May 14, 2013, CCAS Monthly Meeting

by Ann Miller, CCAS Secretary

- Roger Taylor welcomed members and guests to the final meeting of the 2012-2013 year. While there will not be any formal meetings, there will be numerous star parties and BVA observing sessions.
- Kathy B. announced two additions to our Outreach schedule at Tyler Arboretum on July 26 and a children's program September 13. She needs volunteers with telescopes, binoculars or assistance for these events.
- Steve Siskind announced that he will be relocating to Cannonsburg, PA this Summer so this is his last meeting. We wish him clear skies in Western PA and luck finding a new Astronomy Club out there to carry on with. The group will miss you, Steve!
- Liz Smith is working on setting up a "Dinner and Stars" program with a local Pub at the Marshalton Inn. Details to follow.
- Don Knabb presented May Skies using Stellarium freeware. He also reminded the group that later in the year comet Ison could be a spectacular event this Winter, but cautioned the group with a quote from David Levy. "Comets are like cats. They both have tails, and they do what they want." Don also announced the schedule of events at BVA ("Moon Nights") and a full schedule of Outreach including Nottingham (7/26), Tyler (also 7/26), BuckToe (8/24), Tyler again (9/13), Anson Nixon (9/14).
- Next the Program Chair introduced "Youth Night" and our presenters Darrin Loeliger and Hunter Ralls. Darrin presented his summer 2012 internship at Gravic Labs

(Continued on page 9)

Nicholas's Humor Corner

by Nicholas La Para

Speakers for Autumn 2013 CCAS Meetings

by Dave Hockenberry, CCAS Program Chair

Our next meeting will be held on September 10, 2013, starting at 7:30 p.m. The meeting will be held in Room 113, Merion Science Center (former Boucher Building), West Chester University. Guest Speaker: Mark Devlin, PhD Physics at the University of Pennsylvania. "Where did Half of the Starlight of the Universe Go?" Discussion of NASA BLAST experiments from high altitude balloon mounted submillimeter wavelength telescopes.

On October 8, 2013, we welcome Paul Evenson, PhD from the University of Delaware Physics and Astronomy Department. He will present "The Construction and Operation of the Ice Cube Neutrino Observatory at the South Pole."

Dave Goldberg, PhD from Drexel University Physics and Astronomy, will be our guest speaker at the November 12th meeting. His topic is not settled yet, but will either be about his research in Gravitational Lensing or on his new book "Symmetry - the Universe in the Rear View Mirror."

Please note that inclement weather or changes in speakers' schedules may affect the program. In the event there is a change, CCAS members will be notified via e-mail with as much advance notice as possible.

We are looking for presenters for our meetings in the 2013-2014 season. If you are interested in presenting, or know someone who would like to participate, please contact me at programs@ccas.us.

Breakdown Imperils NASA's Search for Other Earths

by Dennis Overbye, New York Times

The Kepler telescope, seen in an artist rendition, has been shut down after the failure of one of the wheels that keep it pointed. Image courtesy of NASA/JPL.

NASA's planet-hunting Kepler spacecraft has been shut down by the failure of one of the reaction wheels that keep it pointed, the space agency announced on May 10, 2013.

"I wouldn't call Kepler down and out yet," said John Grunsfeld, a former astronaut and Hubble repairman who is NASA's associate administrator for space science, at a news conference.

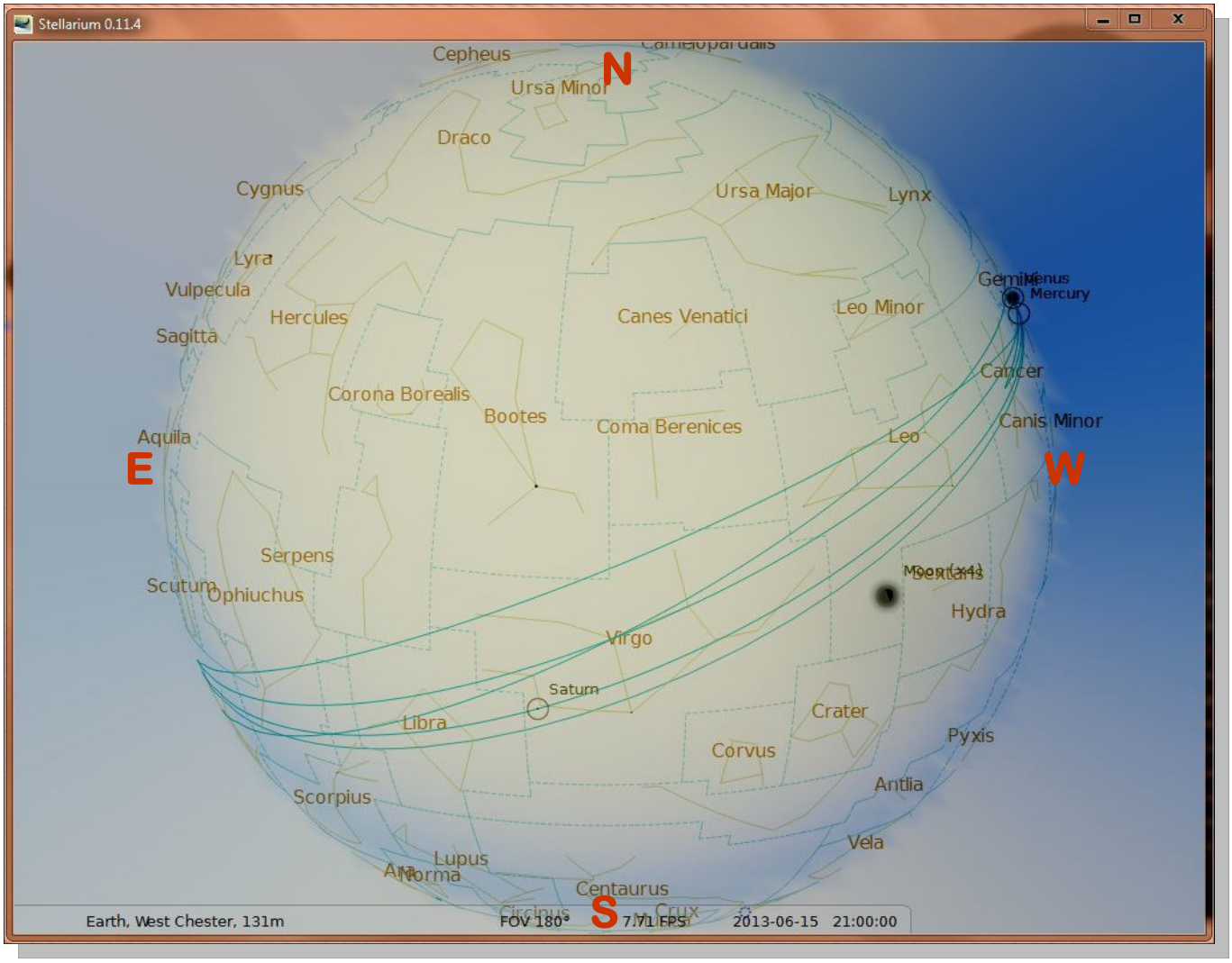
But he and others said that if engineers could not restore the wheel or find some other way to keep the spacecraft's telescope precisely pointed, the failure could end one of the most romantic and successful of NASA's missions: the search for Earth-like planets in habitable orbits around other stars. Just last month, astronomers reported that Kepler had found two planets, only slightly larger than Earth, orbiting a star 1,200 light-years from here in the Goldilocks zone, where liquid water is possible.

(Continued on page 6)

The Sky Over Chester County

June 15, 2013 at 9:00 p.m. ET

Note: This screen capture is taken from Stellarium, the free planetarium software available for download at www.stellarium.org.



Date	Civil Twilight Begins	Sunrise	Sunset	Civil Twilight Ends	Length of Day
6/01/2013	5:02 a.m. EDT	5:34 a.m. EDT	8:23 p.m. EDT	8:56 p.m. EDT	14h 49m 29s
6/15/2013	4:59 a.m. EDT	5:31 a.m. EDT	8:31 p.m. EDT	9:04 p.m. EDT	14h 59m 44s
6/30/2013	5:03 a.m. EDT	5:35 a.m. EDT	8:33 p.m. EDT	9:06 p.m. EDT	14h 57m 57s

Moon Phases					
Last Quarter	6/30/2013	4:53 a.m. EDT	First Quarter	6/16/2013	5:24 p.m. EDT
New Moon	6/08/2013	3:56 p.m. EDT	Full Moon	6/23/2013	11:32 a.m. EDT

June 2013 Observing Highlights

by Don Knabb, CCAS Treasurer & Observing Chair

June 8	**New Moon**
June 10	**A thin crescent Moon is near Venus**
June 12	**Mercury is at its highest in the evening sky for 2013**
June 16	**First-quarter Moon**
June 18	**The Moon passes very close to Spica**
June 20	**Mercury is close to Venus in the evening sky**
June 21	**Summer begins**
June 23	**Full Moon, the largest of 2013**
June 30	**Last Quarter Moon**

The best sights this month: Saturn continues its beautiful show high in the southern sky as soon as it becomes dark. On June 1st find a location with a low western horizon and you can see Mercury, Venus and Jupiter lined up in the glow of the setting Sun. I also consider the June full Moon to be a highlight of the summer. Although it washes out all but the brightest stars the low position of the Moon in the sky really lights up any tree that has an unobstructed side facing south.

Mercury: June is the best month of 2013 to see Mercury in the evening sky, reaching its highest position above the horizon on June 12th. As mentioned above, on June 1st the planets Mercury, Venus and Jupiter line up in the glow of the setting Sun. This will be a nice show!

Venus: Venus is bright but still low in the sky through June. But it helps point the way to Mercury during the first half of the month when it is below and to the right of Mercury. Look as soon as the sky darkens enough to just see the first star of the evening, which will most likely be Arcturus high in the south.

Mars: If you really try you can see Mars just before the sky brightens at dawn. Mars will appear in the early morning hours later this year but it will not be an evening object until 2014.

Jupiter: Jupiter reaches conjunction on the far side of the Sun on June 19th, so the only chance to see it is the first few days of the month when it will be low in the glow of the sunset.

Saturn: Saturn can be observed nearly all night during June. The ringed beauty is high in the south as soon as darkness falls.

Uranus and Neptune: These distant gas giants can be seen a few hours before dawn. I think I'll wait until they are visible at a more civilized hour later this year.

The Moon: Full Moon is on June 23rd. I really enjoy the June full Moon as it hangs low in the sky and lights up the trees with a warm glow. The June full Moon was called the Full Strawberry Moon by Native American tribes. This name was universal to every Algonquin tribe. However, in Europe they called it the Rose Moon.

Constellations: Ah, the summer sky. Yes, you must stay up later to see the stars but at least you won't be shivering! Leo the Lion is diving into the west. Look for Scorpius if you have a clear southern horizon and see the bright star Antares shining like a red heart in the big bug of summer. In the east we have bright Vega in Lyra followed by the birds of summer: Cygnus the swan and Aquila the Eagle.

Messier/deep sky: Grab your binoculars or telescope and find the globular clusters M10 and M12 in faint Ophiuchus, then head south to see M4, another globular cluster just to the west of Antares in Scorpius. If you are a late night person you'll be able to see the numerous wonders that are in Sagittarius as it rises in the southeast.

Comets: Comet PanSTARRS continues to be visi-

(Continued on page 11)

Kepler Imperiled (Cont'd)

(Continued from page 3)

More potentially habitable planets, even smaller and more Earth-like, lurk in the pipeline, astronomers say, but have not yet been confirmed. "We believe there are planets there that we haven't found yet," said William Borucki of NASA's Ames Research Center, the founder and leader of the Kepler effort.

As word leaked about the possible loss of Kepler, the mood in the astronomical community was grim. "It was one of those things that was a gift to humanity," said one astronomer, who spoke on condition of anonymity before NASA made the news public. "We're all going to lose, for sure."

Kepler, launched in March 2009, orbits the sun at roughly the same distance as Earth. Its mission is to determine the fraction of stars in the galaxy that harbor Earth-like planets by carrying out a survey of some 150,000 stars in the constellations of Cygnus and Lyra, looking for the dips in starlight caused by planets passing, or transiting, in front of their suns. The spacecraft has identified 130 planets and 2,740 other candidates. About 230 are the size of Earth, and 820 others are only twice as big as Earth and are probably rocky worlds similar to our own, Mr. Borucki said.

Kepler's mission has cost $600 million so far. It was designed to operate for four years, but last year it was extended three more years, until 2016.

Since the Earth transits the Sun only once a year, two more years would give astronomers a chance to see more transits of the planets they are looking for, ones with orbits similar to our own. Without the extra time, the data will be noisy, astronomers say, so the answer will be a little more uncertain than it might have been. Geoffrey Marcy, a Kepler astronomer at the University of California, Berkeley, said that without more data coming from Kepler, he thought astronomers would be "right on the edge" of answering the question of how common other Earths are, but with less statistical certainty than originally desired.

In January, engineers noticed that one of the reaction wheels that keep the spacecraft pointed was experiencing too much friction. They shut down the spacecraft for a couple of weeks to give it a rest, in the hope that the wheel's lubricant would spread out and solve the problem. But when they turned it back on, the friction was still there. Until now, the problem had not interfered with observations, but on Tuesday, the spacecraft went into a so-called safe mode, and the engineers determined that the reaction wheel had stopped.

Kepler was launched with four reaction wheels, but one failed last year after showing signs of erratic friction. Three wheels are required to keep Kepler properly and precisely aimed, and now there are only two. The lack of three working wheels probably robs it of the ability to point precisely enough to detect Earth-size planets.

Project managers hope to remedy the situation by rocking the wheel back and forth, or perhaps resurrecting the wheel that failed last year, an effort that will probably take several months, according to Kepler's deputy project manager, Charles Sobeck of the Ames Research Center. It would take that long as well to figure out what else the telescope, which is itself in fine condition, can be used for if it can no longer hunt planets.

Mr. Borucki said that the Kepler project had been a long journey — and a phenomenal success — and that he was not ready to pronounce it over. When Kepler was conceived, he said, nobody knew if any other stars had planets; now we know that almost every star in the galaxy has a planet and that the nearest exoplanet might be only 10 light-years away. "I'm delighted and surprised with what we have done," he said.

For Mr. Grunsfeld, who played mechanic to the Hubble telescope during several lengthy spacewalks, the Kepler malfunction looked particularly frustrating. "Unfortunately, it's not in a place where I can go and fix it," he said.

65th Anniversary of the Hale Telescope at Mount Palomar

Hale Telescope. Image courtesy of Tom Jarrett

The first week of June marks the 65th anniversary of the dedication of the Hale Telescope at Mount Palomar.

George Ellery Hale was an American solar astronomer whose knack for fundraising resulted in the creation of some of the leading observatories in the world, including Yerkes, Mount Wilson, and Mount Palomar. The enormous 5.1-meter (200-inch) telescope at Mount Palomar was dedicated, posthumously, in his honor. A contemporary account of the dedication ceremony states that "the huge instrument swung north and south, east and west, as smoothly as if it were a veteran of the skies. It seemed incredible that a piece of machinery weighing 500 tons could be controlled so easily by only a 1/12-horsepower motor."

The telescope weighs over a million pounds and is so exquisitely balanced that it can be moved by the push of a hand. Its giant curved mirror was polished to near optical perfection--within two-millionths of an inch. In the 1920s many had thought that to be impossible.

The massive telescope was begun in 1928. It required the most creative engineering in the world to invent the technology many had said was impossible. The mirror alone took eleven years to polish. The telescope was so big it had to be fabricated at a shipyard. The entire process had initiated the era of big science. Twenty years after it had been conceived the new instrument was finally ready.

Between 1948 and 1993 the Hale Telescope was the world's largest, and it continues to be used nightly for a wide range of astronomical studies. On average the weather allows for at least some data collection about 290 nights a year.

The Hale Telescope at Palomar Observatory is operated as part of a collaborative agreement between the California Institute of Technology, its divisions Caltech Optical Observatories and the Jet Propulsion Laboratory (operated for NASA), and Cornell University.

Exploring the Water World

by Diane K. Fisher

In some ways, we know more about Mars, Venus and the Moon than we know about Earth. That's because 70% of our solar system's watery blue planet is hidden under its ocean. The ocean contains about 98% of all the water on Earth. In total volume, it makes up more than 99% of the space inhabited by living creatures on the planet.

As dominant a feature as it is, the ocean—at least below a few tens of meters deep—is an alien world most of us seldom contemplate. But perhaps we should.

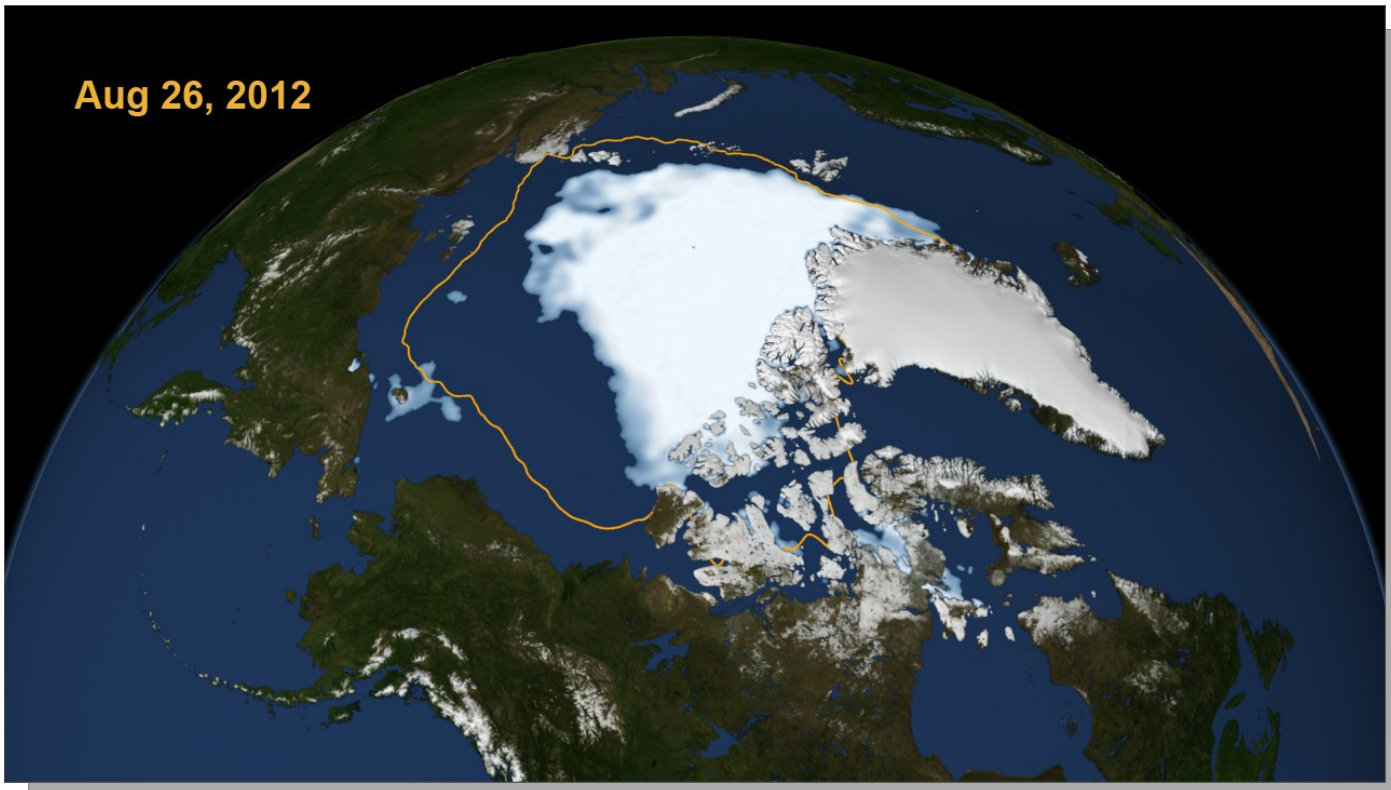
The ocean stores heat like a "fly wheel" for climate. Its huge capacity as a heat and water reservoir moderates the climate of Earth. Within this Earth system, both the physical and biological processes of the ocean play a key role in the water cycle, the carbon cycle, and climate variability.

This great reservoir continuously exchanges heat, moisture, and carbon with the atmosphere, driving our weather patterns and influencing the slow, subtle changes in our climate.

The study of Earth and its ocean is a big part of NASA's mission. Before satellites, the information we had about the ocean was pretty much "hit or miss," with the only data collectors being ships, buoys, and instruments set adrift on the waves.

Now ocean-observing satellites measure surface topography, currents, waves, and winds. They monitor the health of phytoplankton, which live in the surface layer of the ocean and supply half the oxygen in the atmosphere. Satellites monitor the ex-

(Continued on page 9)



This image from September 2012, shows that the Arctic sea is the smallest recorded since record keeping began in 1979. This image is from NASA's Scientific Visualization Studio at Goddard Space Flight Center.

Space Place (cont'd)

(Continued from page 8)

tent of Arctic sea ice so we can compare this important parameter with that of past years. Satellites also measure rainfall, the amount of sunlight reaching the sea, the temperature of the ocean's surface, and even its salinity!

Using remote sensing data and computer models, scientists can now investigate how the oceans affect the evolution of weather, hurricanes, and climate. In just a few months, one satellite can collect more information about the ocean than all the ships and buoys in the world have collected over the past 100 years!

NASA's Earth Science Division has launched many missions to planet Earth. These satellites and other studies all help us understand how the atmosphere, the ocean, the land and life—including humans—all interact together.

Find out more about NASA's ocean studies at http://science.nasa.gov/earth-science/oceanography. Kids will have fun exploring our planet at The Space Place, http://spaceplace.nasa.gov/earth.

This article was written by Diane K. Fisher and provided through the courtesy of the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

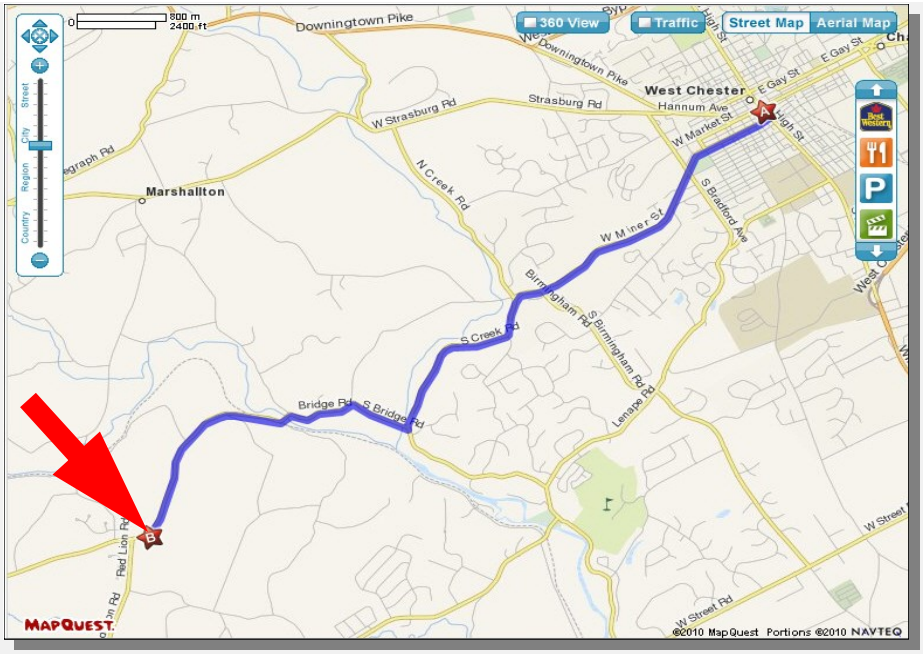
Minutes (Cont'd)

(Continued from page 2)

under CCAS member Bruce Holenstein. Darrin's project is scanning glass analog photographic plates from college observatories in the last century. Darrin is also scanning the logbooks accompanying the glass photographic plates. The data will be made available to interested researchers.

- Hunter Ralls then presented his Summer session at NASA Space Camp, at the University of Alabama in Huntsville. He presented an overview of his activities in the "Pilot Track."
- There will be no June Meeting for CCAS, although we will hold our regularly scheduled BVA Observing sessions through the Summer.
- We were reminded that our next meeting September, 2013 marks the 20th Anniversary of the Founding of the Chester County Astronomical Society. More to follow...

CCAS Directions



Brandywine Valley Association
1760 Unionville Wawaset Rd
West Chester, PA 19382
(610) 793-1090
http://brandywinewatershed.org/

BVA was founded in 1945 and is committed to promoting and protecting the natural resources of the Brandywine Valley through educational programs and demonstrations for all ages.

Brandywine Valley Association

The monthly observing sessions (held February through November) are held at the Myrick Conservation Center of the Brandywine Valley Association.

To get to the Myrick Conservation Center from West Chester, go south on High Street in West Chester past the Courthouse. At the next traffic light, turn right on Miner Street, which is also PA Rt. 842. Follow Rt. 842 for about 6 miles. To get to the observing site at the BVA property, turn left off Route 842 into the parking lot by the office: look for the signs to the office along Route 842. From that parking lot, go left through the gate and drive up the farm lane about 800 feet to the top of the hill. The observing area is on the right.

If you arrive after dark, *please turn off your headlights and just use parking lights* as you come up the hill (so you don't ruin other observers' night vision).

Through the Eyepiece: Saturn and the Magnificent Rings

by Don Knabb, CCAS Treasurer & Observing Chair

For me, few objects compare with the sight of Saturn in a telescope. No picture can give you the same view as looking through the eyepiece at this amazing planet. If you want to get a "WOW!" from a new stargazer, just show them Saturn in a telescope.

Although Saturn was at opposition on April 28th, the viewing will continue to be excellent for several months. The most amazing feature of Saturn is of course its rings, so here are a few facts to provide some background for your observing.

Galileo described the rings as "handles" or large moons on either side of the planet. Two years later he was puzzled to discover the rings had disappeared. What happened is that Galileo happened to look at Saturn when the rings were edge on and they were invisible to his telescope. This happened most recently in 2011.

Saturn's rings and equator are inclined by 27° to Saturn's orbit, so we see them from different aspects at different times, with the angle varying over a 30 year period.

You'll need at least 30X to see the rings and more to see the structure of the rings. There are hundreds of individual rings, but the most prominent are the A, B and C rings. With a 100mm or 200mm scope you will be able to see the Cassini division, a gap between rings A and B, discovered in 1676 by (you guessed it) Giovanni Cassini. The C ring is the most difficult to see and usually requires good seeing and a telescope of at least 150mm. Also look for the shadow of the rings on Saturn and Saturn's shadow on the rings.

I recently observed Saturn with a 127mm refractor at 73X. Although I had to wait for those moments when the swirling of the atmosphere was calm, the Cassini division was easily seen.

The rings are truly huge, stretching from edge to edge the distance from Earth to the Moon. They consist of billions of particles that range in size from microscopic to huge boulders. Numerous studies indicate the rings are composed of ice, rock and dirt – that is they are made of "dirty snowballs" like tiny comets with diameters typically of only about 10 centimeters.

(Continued on page 11)

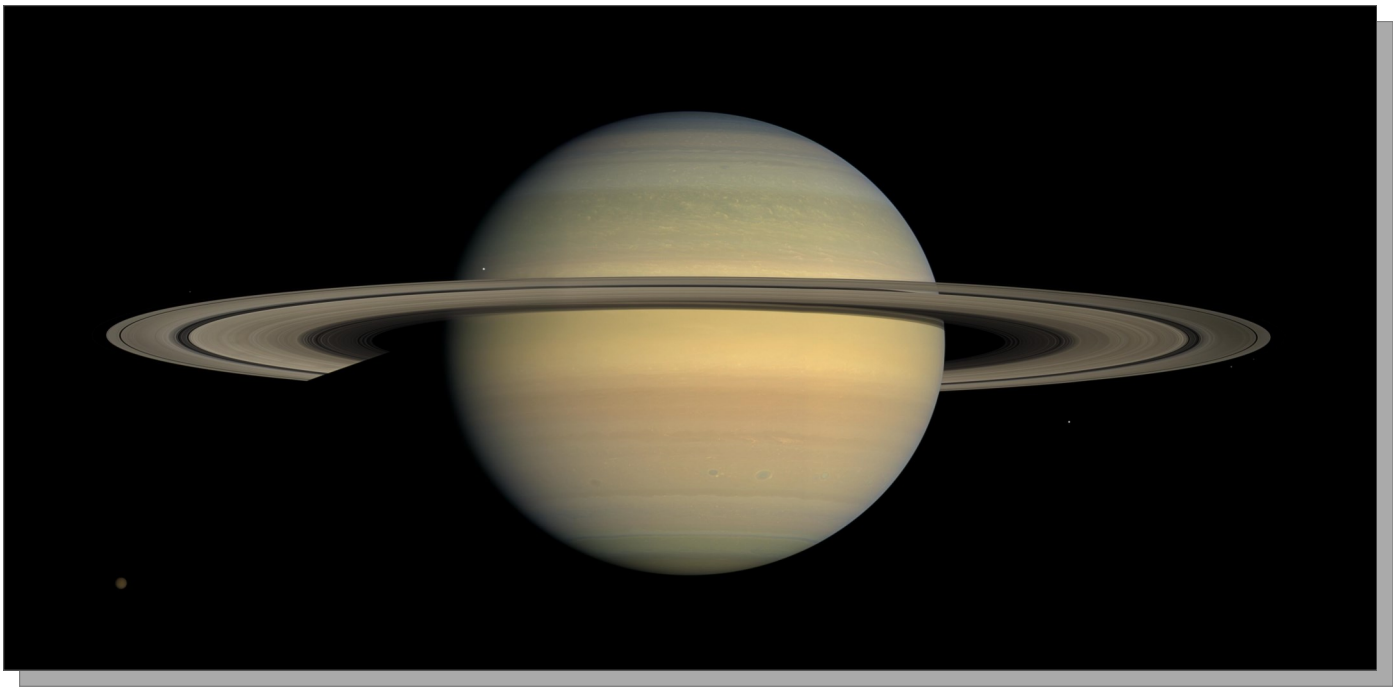


Image courtesy: NASA

NASA Captures 'Rat' on Mars, Has Own Twitter Account

by Isabel Alface, Nature World News (naturewn.com)

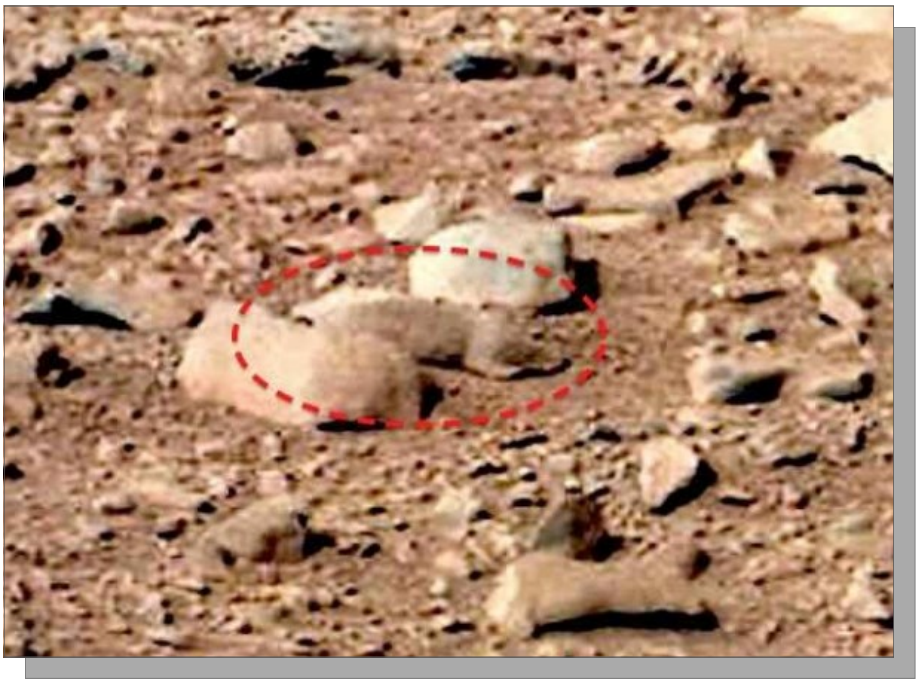


Image from YouTube Video

Is there life on Mars? A photo of a rat on Mars was captured by NASA's curiosity rover in 2012, and is now making the rounds online. The only catch is it's actually a stone that resembles a rat.

That's not stopping believers out there of life on Mars. One has even gone on to create a whole Twitter account for this remarkable stone that resembles a rat. This Mars-like stone already has a Twitter account @RealMarsRat which has garnered 475 followers in less than 2 days. This "rat" is also active in the social networking site as it had tweeted 76 times already and interacts with its followers.

The photo which started all the online buzz offers a panoramic view of the planet's surface seems to reveal what looks like a "Mars rat".

"It's a cute rodent on Mars. Note its lighter-color upper and lower eyelids, its nose and cheek areas, its ear, its front leg and stomach," Scott Waring wrote at UFO Sightings Daily back in December. "Looks similar to a squirrel camouflaged in the stones and sand by its colors."

(Continued on page 12)

Eyepiece (Cont'd)

(Continued from page 10)

The rings of Saturn are incredibly thin in relation to their overall size. Estimates of the thickness vary greatly, but one estimate for the average thickness is 20 meters. To understand how their thickness compares to their overall size, if the rings were as thick as a DVD disk the disk would be about 2 miles wide to be in proper proportion to the thickness!

There are two general theories about how Saturn's rings formed. One is that the rings are the material that was unable to congeal into a satellite. The other is that the rings formed when an existing satellite wandered to close to Saturn and was torn apart.

So enjoy this most intriguing of planets during the warm summer nights, and share the view with friends and family for a sight they will never forget.

Observing (Cont'd)

(Continued from page 5)

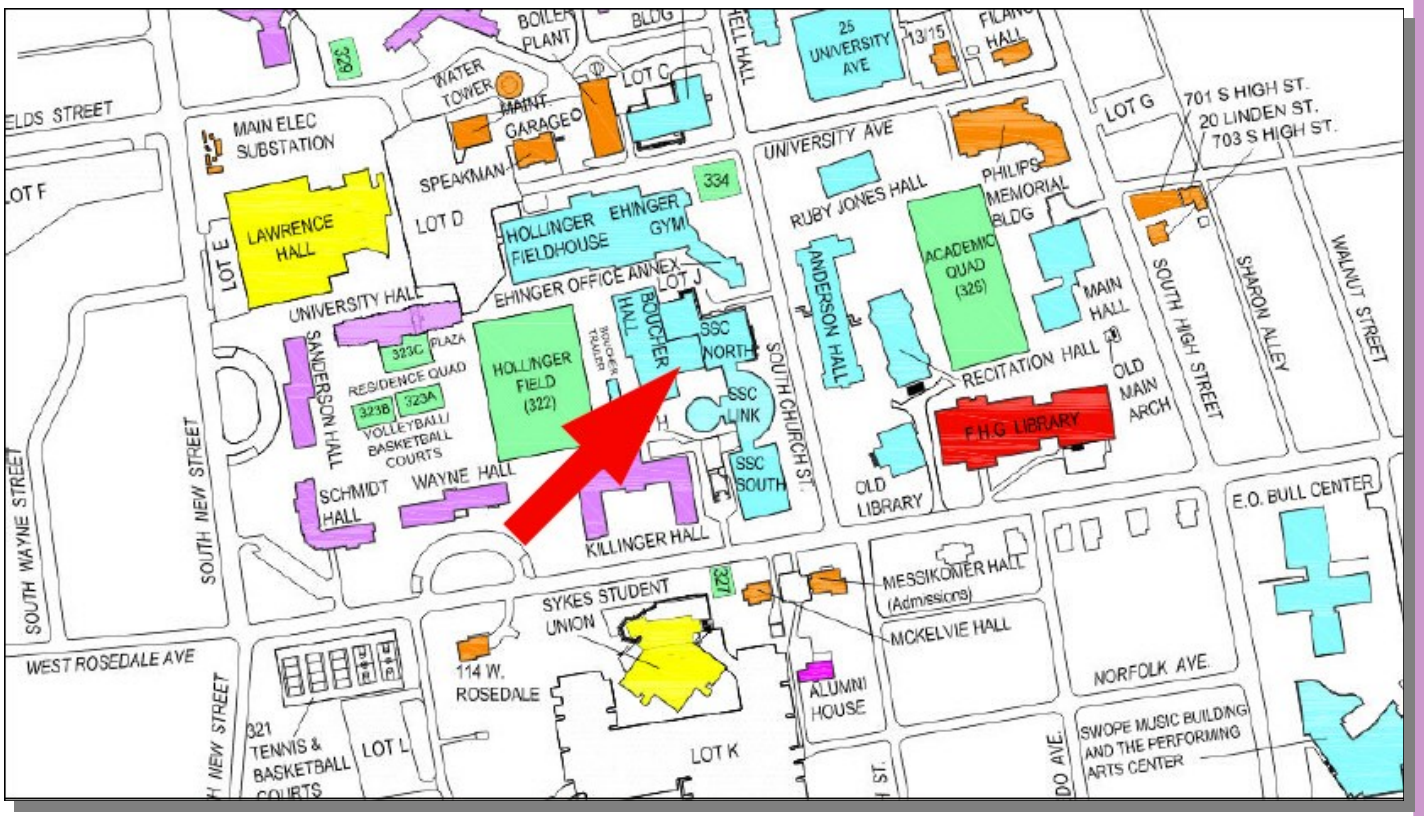
ble but you'll need a dark site and a good sized telescope as the comet has faded to magnitude 9 or 10. There is a sky chart in the June issue of Astronomy magazine that plots the nightly position of the comet among the background stars.

Meteor showers: On June 25/26 you might catch a few meteors from the Boötid shower. Normally the shower is very weak, but occasional outbursts produce a hundred or more meteors per hour. The meteors will appear to radiate from the constellation Boötes the Herdsman which is high in the sky during June.

CCAS Directions

West Chester University Campus

The monthly meetings (September through May) are held in Room 113 in Merion Science Center (formerly the Boucher Building), attached to the Schmucker Science Center. The Schmucker Science Center is located at the corner of S. Church St & W. Rosedale Ave. Parking is generally available across Rosedale in the Sykes Student Union parking lot (Lot K).



Mars Rat (Cont'd)

(Continued from page 11)

In an update to that post, Waring hypothesized the possibility that NASA flew the rat/squirrel to Mars secretly, as part of an experiment testing out the Red Planet's ability to support life as we know it.

"Why would they not tell us about it?" Waring wrote. "Because the squirrel would be expected to die eventually and that would get PETA [People for the Ethical Treatment of Animals] to fight against them in a court of law."

CCAS Membership Information and Society Financials

Treasurer's Report

by Don Knabb

May 2013 Financial Summary

Beginning Balance	$1,402
Deposits	$140
Disbursements	$267
Ending Balance	$1,275

New Member Welcome!

Welcome new CCAS members Louis Caccamo and his family of West Chester, PA.

We're glad you decided to join us under the stars! Clear skies to you!

Membership Renewals

You can renew your CCAS membership by writing a check payable to "Chester County Astronomical Society" and sending it to our Treasurer:

Don Knabb
988 Meadowview Lane
West Chester PA 19382

The current dues amounts are listed in the *CCAS Information Directory*. Consult the table of contents for the directory's page number in this month's edition of the newsletter.

CCAS Information Directory

Join the Fight for Dark Skies!

You can help fight light pollution, conserve energy, and save the night sky for everyone to use and enjoy. Join the nonprofit International Dark-Sky Association (IDA) today. Individual memberships start at $30.00 for one year. Send to:

International Dark-Sky Association
3225 North First Avenue
Tucson, AZ 85719

Phone: **520-293-3198**
Fax: **520-293-3192**
E-mail: **ida@darksky.org**

For more information, including links to helpful information sheets, visit the IDA web site at:

http://www.darksky.org

Note that our CCAS Webmaster John Hepler has a link to the IDA home page set up on our Society's home page at **http://www.ccas.us**.

Dark-Sky Website for PA

The Pennsylvania Outdoor Lighting Council has lots of good information on safe, efficient outdoor security lights at their web site:

http://www.POLCouncil.org

Find out about Lyme Disease!

Anyone who spends much time outdoors, whether you're stargazing, or gardening, or whatever, needs to know about Lyme Disease and how to prevent it. You can learn about it at:

http://www.LymePA.org

Take the time to learn about this health threat and how to protect yourself and your family. It is truly "time well spent"!

CCAS Event Information

We've set up a special phone number you can dial to find out if our monthly observing session and other scheduled events will be held or postponed. Call **610-436-0829** after 5 PM ET to hear a recording to find out the latest news.

Good Outdoor Lighting Websites

One of the biggest problems we face in trying to reduce light pollution from poorly designed light fixtures is easy access to good ones. When you convince someone, a neighbor or even yourself, to replace bad fixtures, where do you go for good lighting fixtures? Check out these sites and pass this information on to others. Help reclaim the stars! And save energy at the same time!

Starry Night Lights

Light pollution from poor quality outdoor lighting wastes billions of dollars and vast quantities of valuable natural resources annually. It also robs us of our heritage of star-filled skies. Starry Night Lights is committed to fighting light pollution. The company offers the widest selection of ordinance compliant, night sky friendly and neighbor friendly outdoor lighting for your home or business. Starry Night Lights is located in Park City, Utah.

Phone: **877-604-7377**
Fax: **877-313-2889**

http://www.starrynightlights.com

★ ★ ★ ★ ★

Green Earth Lighting
Formerly
Outdoor Lighting Associates

Green Earth Lighting is a dedicated lifetime corporate member of the International Dark-Sky Association. GEL's products are designed to reduce or eliminate the negative effects outdoor lighting can have while still providing the light you need at night.

Green Earth Lighting LLC
620 Onion Creek Ranch Rd
Driftwood, Texas 78619

Phone: **512-944-7354**

http://www.greenearthlighting.com

Local Astronomy-Related Stores

Listing retail sites in this newsletter does not imply endorsement of any kind by our organization. This information is provided as a service to our members and the public only.

Skies Unlimited

Skies Unlimited is a retailer of telescopes, binoculars, eyepieces and telescope accessories from Meade, Celestron, Televue, Orion, Stellarvue, Takahashi, Vixen, Losmandy and more.

Skies Unlimited
Suburbia Shopping Center
52 Glocker Way
Pottstown, PA 19465

Phone: **610-327-3500** or **888-947-2673**
Fax: **610-327-3553**

http://www.skiesunlimited.net

★ ★ ★ ★ ★

Spectrum Scientifics
Quality Science Products for All Ages

Located in Manayunk, Spectrum Scientifics educates and entertains customers with an array of telescopes, microscopes, binoculars, science toys, magnets, labware, scales, science instruments, chemistry sets, and much more.

4403 Main Street
Philadelphia, PA 19127

Phone: **215-667-8309**
Fax: **215-965-1524**

Hours:
Tuesday thru Saturday: 10AM to 6PM
Sunday and Monday: 11AM to 5PM

http://www.spectrum-scientifics.com

CCAS Information Directory

CCAS Lending Telescopes

Contact Don Knabb to make arrangements to borrow one of the Society's lending telescopes. CCAS members can borrow a lending telescope for a month at a time; longer if no one else wants to borrow it after you. Don's phone number is 610-436-5702.

CCAS Lending Library

Contact our Librarian, Barb Knabb, to make arrangements to borrow one of the books in the CCAS lending library. Copies of the catalog are available at CCAS meetings, and on the CCAS website. Barb's phone number is 610-436-5702.

Contributing to *Observations*

Contributions of articles relating to astronomy and space exploration are always welcome. If you have a computer, and an Internet connection, you can attach the file to an e-mail message and send it to: **newsletter@ccas.us**

Or mail the contribution, typed or handwritten, to:

John Hepler
2115 Lazor St.
Apt. 227
Indiana, PA 15701

CCAS Newsletters via E-mail

You can receive the monthly newsletter (in full color!) via e-mail. All you need is a PC or Mac with an Internet e-mail connection. To get more information about how this works, send an e-mail request to John Hepler, the newsletter editor, at: **newsletter@ccas.us**.

CCAS Website

John Hepler is the Society's Webmaster. You can check out our Website at:

http://www.ccas.us

John welcomes any additions to the site by Society members. The contributions can be of any astronomy subject or object, or can be related to space exploration. The only requirement is that it is your own work; no copyrighted material! Give your contributions to John Hepler at (724) 801-8789 or e-mail to webmaster@ccas.us

CCAS Purpose

The Chester County Astronomical Society was formed in September 1993, with the cooperation of West Chester University, as a non-profit organization dedicated to the education and enjoyment of astronomy for the general public. The Society holds meetings (with speakers) and observing sessions once a month. Anyone who is interested in astronomy or would like to learn about astronomy is welcome to attend meetings and become a member of the Society. The Society also provides telescopes and expertise for "nights out" for school, scout, and other civic groups.

CCAS Executive Committee

For further information on membership or society activities you may call:

President:	Roger Taylor 610-430-7768
Vice President:	Liz Smith 610-842-1719
ALCor, Observing, and Treasurer:	Don Knabb 610-436-5702
Secretary:	Ann Miller 610-558-4248
Librarian:	Barb Knabb 610-436-5702
Program:	Dave Hockenberry 610-558-4248
Education:	Kathy Buczynski 610-436-0821
Webmaster and Newsletter:	John Hepler 724-349-5981
Public Relations:	Deb Goldader 610-304-5303

CCAS Membership Information

The present membership rates are as follows:

REGULAR MEMBER……$25/year
SENIOR MEMBER…….$10/year
STUDENT MEMBER……..$ 5/year
JUNIOR MEMBER……..$ 5/year
FAMILY MEMBER…….$35/year

Membership Renewals

Check the Membership Renewals on the front of each issue of *Observations* to see if it is time to renew. If you need to renew, you can mail your check, made out to "Chester County Astronomical Society," to:

Don Knabb
988 Meadowview Lane
West Chester PA 19382-2178

Phone: **610-436-5702**
e-mail: **treasurer@ccas.us**

*Sky & Tele*scope Magazine Group Rates

Subscriptions to this excellent periodical are available through the CCAS at a reduced price of **$32.95,** much less than the newsstand price of $66.00, and also cheaper than individual subscriptions ($42.95)! Buying a subscription this way also gets you a 10% discount on other Sky Publishing merchandise.

To **start** a **new** subscription, make **sure** you make out the check to the **Chester County Astronomical Society**, note that it's for *Sky & Telescope*, and mail it to Don Knabb.

To **renew** your "club subscription" contact Sky Publishing directly. Their phone number and address are in the magazine and on their renewal reminders. If you have **any** questions call Don first at 610-436-5702.

Astronomy Magazine Group Rates

Subscriptions to this excellent periodical are available through the CCAS at a reduced price of **$34.00** which is much less than the individual subscription price of $42.95 (or $60.00 for two years). If you want to participate in this special Society discount offer, **contact our Treasurer Don Knabb.**